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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/903,059

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Constantin Bulucea

NS-4971US

9375

43734

7590

08/23/2006

RONALD J. MEETIN, ATTORNEY AT LAW
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EXAMINER

FARAHANI, DANA

ART UNIT

PAPER NUMBER

2891

DATE MAILED: 08/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/903,059	BULUCEA, CONSTANTIN	
	Examiner	Art Unit	
	Dana Farahani	2891	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 38-46, 71-122, 129 and 130 is/are allowed.
- 6) ☒ Claim(s) 17, 18, 20-27, 29-31, 53, 54, 61, 62, 69, 124, 125, 127 and 128 is/are rejected.
- 7) ☒ Claim(s) 47-52 and 55-60 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 17-18, 20-21, 23-27, 29-30, 53, 61, 69, 124-125, and 127-128 are rejected under 35 U.S.C. 102(e) as being anticipated by Voldman (US Patent 6,455,902), newly cited.

Re. claims 17-18, 20, 23-25, 29, 61, 69, 124, and 127, Voldman discloses in figure 1, a structure comprising:

a varactor which comprises:

(a) a plate region 22 and a body region 20 of a semiconductor body, the body region being of a first conductivity type, the plate region being of a second conductivity type opposite to the first conductivity type, the plate and body regions meeting each other to form a p-n junction and extending to a primary surface of the semiconductor body;

(b) a plate electrode VD and a body electrode VEPi respectively connected to the plate and body regions, the plate electrode being at a plate-to-body bias voltage relative to the body electrode;

(c) a dielectric layer, below gate 12, situated over the semiconductor body and contacting the body region; and

(d) a gate electrode 12 situated over the dielectric layer at least where the dielectric layer contacts material of the body region, the gate electrode being at a gate-to-body bias voltage relative to the body electrode; and

a field insulating region 13 extending into the semiconductor body along the primary surface to define a semiconductor island laterally surrounded by the field insulating region and substantially fully occupied by material of the plate and body regions. Applying and varying voltages to the device is considered a method of using the device.

Re. claims 21 and 30, the body region substantially laterally surrounds and extends below substantially all of the plate region.

Re. claims 26-27, see figure 4 and column 4, wherein the gate voltage corresponds with drain current, hence drain voltage, approximately linearly.

Re. claims 125 and 128, field insulating region 14 substantially laterally surrounds at least one further island occupied by material of the body region substantially up to the primary surface such that material of the body region extends from each semiconductor island to each other semiconductor island.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 22, 31, 54, and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voldman as applied to claims rejected above under 35 U.S.C. 102(e), and further in view of the Japanese patent issued to Misu et al. (Doc. 1D#:07226643), previously cited.

Regarding claims 22 and 31, Voldman discloses the claimed invention, as discussed above, except for the plate region having finger portions continuous with the main plate portion, extending laterally away from the main plate portion and meeting the body region there along.

The Japanese patent discloses in figures 7, 9, and 12, that unparallel conductive finger shaped contact regions in a device are interdigitized. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the finger shaped plate portions of the Voldman structure finger shaped, since this kind of configuration reduces the current density in a region of a contact area and consequently reduces undesirable effects such as heat concentration in the contact region.

Regarding claims 54 and 62, there are at least 4 finger portions, 2 of figure 12 of the Japanese reference, which is of lesser average dimension perpendicular to that finger portion (the horizontal main portion wherein fingers 2 branch out therefrom) than is the main plate portion.

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Also, finger 18 of figure 11 has two horizontal finger portions perpendicular to the main finger 18.

Allowable Subject Matter

5. Claims 38-46 and 71-122, 129, and 130 are allowed.
6. Claims 47-52 and 55-60 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The reason for allowance of the allowed claims is the specifics of the method of varying the applied voltages, also adjusting the plate and the inversion areas, recited in the method claims.

The reason for allowance, and notice of allowability of the device claims, above, is the inclusion therein of the presence of the circuitry having a capacitance signal path, in which the varactor is situated.

Response to Arguments

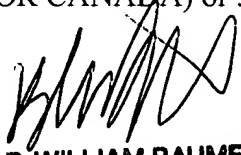
7. Applicant's arguments with respect to the rejected claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (571)272-1706. The examiner can normally be reached on M-F 9:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571)272-1722. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


B. WILLIAM BAUMEISTER
SUPERVISORY PATENT EXAMINER

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